

ABSTRACT

The present invention provides a process for producing microsphere particles comprising the following steps: (a) charging to a first vessel water and a dispersion stabilizer and mixing to form a water phase, (b) charging co-monomers to second vessel at 60 °C, (c) treating a charge control agent, a pigment and a micronized wax with a coupling agent, (d) charging to the second vessel the treated charge control agent, pigment and micronized wax of step (c), (e) charging and dissolving the polymerization initiator to the second vessel to form a co-monomer phase, (f) pumping the co-monomer phase of step (e) through a disperser at a rate of about one liter per hour while simultaneously pumping the water phase of step (a) through the disperser at a rate of about four liters into a polymerization reactor, (g) mixing the water and monomer phases together in the polymerization reactor having a paddle rotation speed of about 200 rpm (30 m/sec) at a temperature of about 75 °C for about four to about six hours under an inert atmosphere to form a slurry of polymerized microsphere particles having a particle size from about 3 to about 20 microns, (h) mixing the slurry of polymerized microsphere particles in the polymerization reactor under vacuum and a temperature of about 85 degrees C to remove any residual co-monomers, (i) acidifying the slurry to dissolve the dispersion stabilizer, (j) passing the slurry of step (i) through a centrifuge to remove water and dispersion stabilizer dissolved therein to provide centrifuged polymerized microsphere particles, and (k) washing the centrifuged polymerized microsphere particles with water until a pH of 7 is achieved.

The present invention also provides color toners for use in digital laser printers and photocopiers as well as pharmaceutical and cosmetic products comprising polymerized microsphere particles produced by the process disclosed herein.